



## Short report

Lifecourse influences on women's smoking before, during and after pregnancy<sup>☆</sup>Hilary Graham<sup>a,\*</sup>, Summer Sherburne Hawkins<sup>b</sup>, Catherine Law<sup>b</sup><sup>a</sup> University of York, Department of Health Sciences, Area 2, Seebohm Rowntree Building Dept., York YO10 5DD, United Kingdom<sup>b</sup> Centre for Paediatric Epidemiology and Biostatistics, UCL Institute of Child Health 30 Guilford Street, London WC1N 1EH, United Kingdom

## ARTICLE INFO

## Article history:

Available online 24 November 2009

## Keywords:

Cigarette smoking

Lifecourse

Women

Pregnancy

Quitting

UK

Disadvantage

## ABSTRACT

The concept of the socioeconomic lifecourse is increasingly informing understanding of the social patterning of cigarette smoking. We investigated lifecourse influences on (i) women's smoking status (smoker/non-smoker) before pregnancy and (ii) quitting in pregnancy in the UK Millennium Cohort study. Our analyses included conventional measures of the socioeconomic lifecourse (woman's childhood circumstances, education, current socioeconomic circumstances) and measures of her domestic lifecourse (age of becoming a mother, current cohabitation status), as well as parity (first/subsequent child). In analyses of quitting, we also included pre-pregnancy cigarette consumption.

Our study underlined, firstly, the importance of lifecourse disadvantage. Those experiencing greater disadvantage with respect to their childhood circumstances, education and current circumstances were at greater risk of being a smoker before pregnancy. A disadvantaged domestic lifecourse – earlier entry into motherhood and lone motherhood – further increased the risk. Poorer childhood circumstances, educational disadvantage, poorer current circumstances and early motherhood also significantly increased the odds of quitting in pregnancy. Secondly, parity was a major predictor of smoking behaviour. First-time mothers had higher odds both of smoking before pregnancy and quitting in pregnancy. The effects of parity were independent of women's lifecourse. Our study supports tobacco control policies which recognise and address inequalities across the lifecourse. However, our study suggests that the dye is not irrevocably cast by social disadvantage: first pregnancy uniformly increases the chances of quitting. Interventions which help smokers having their first baby to quit have an important part to play in promoting maternal and child health.

© 2009 Elsevier Ltd. All rights reserved.

## Background

The concept of 'the socioeconomic lifecourse' (Kuh, Power, Blane, & Bartley, 2004) is shedding light on socioeconomic gradients in smoking in high-income countries. In its conventional formulation, the concept links socioeconomic circumstances (SEC) in childhood (indexed for example by parental occupation) to educational pathways (e.g. age of leaving fulltime education) and adult SEC (e.g. own occupation). Studies with relevant measures have found that the effects of childhood SEC on smoking risk are largely mediated by education and adult SEC (Brunner, Shipley, Blane, Smith, & Marmot, 1999; Gilman, Abrams, & Buka, 2003; Graham & Der, 1999; Power et al., 2005).

However, women's socioeconomic lifecourse is only partially captured by this conventional model. Partnership and parenthood histories are also critical determinants of women's lifetime circumstances, even in societies where most working-age women are in paid employment (Graham, 2007). Thus, early and lone motherhood independently increase the risk of persisting disadvantage, compounding the effects of childhood disadvantage with which both are associated (Graham, 2007). This suggests that the 'domestic lifecourse' should be integral to lifecourse analyses of women's smoking (Graham, Francis, Inskip, Harman, & the SWS Study Team, 2006). Ideally, detailed measures of parenting and partnership histories would be used; in their absence, age at first birth and cohabitation status (living alone/with a partner) provide proxies.

A few studies of smoking in the general female population have included measures of the conventionally-measured and the domestic lifecourse. They suggest that both early and lone motherhood increase the odds of smoking and reduce odds of quitting after adjustment for childhood SEC, education and adult SEC (Graham et al., 2006; Jefferis, Power, Graham, & Manor, 2004; Tehranifar, Liao, Ferris, & Terry, 2009).

<sup>☆</sup> We would like to thank all of the Millennium Cohort Study families for, their cooperation, and the Millennium Cohort Study team at the Centre, for Longitudinal Studies, Institute of Education, University of London.

\* Corresponding author. Tel.: +44 1904 321349.

E-mail address: [hmg501@york.ac.uk](mailto:hmg501@york.ac.uk) (H. Graham).

We extend this approach by focusing on smoking in pregnancy, a life-stage triggering positive changes in smoking habits. Estimates suggest that 15–30% of pregnant smokers quit and, while the majority resume smoking after birth, the long-term quit rate is higher than among the non-pregnant population (USDHHS, 2001; West, 2002). Lifecourse factors are known to be important: smoking rates are higher and quit rates are lower among expectant mothers with lower educational levels and in poorer circumstances, and among younger and unpartnered women (USDHHS, 2001; West, 2002). Spencer (2006) investigated the effects of childhood disadvantage (measured by father's occupation) on smoking status in pregnancy, noting that a combined measure of low educational attainment, teenage pregnancy and poor adult SEC mediated its effects. Parity is also known to be a predictor, with higher quit rates among women expecting their first baby than among those who are already mothers (Kahn, Certain, & Whitaker, 2002; West, 2002). It has yet to be established whether the positive effects of first pregnancy are blunted by or independent of disadvantage across the lifecourse.

We investigate (i) smoking status (smoker/non-smoker) before pregnancy and (ii) quitting in pregnancy in analyses that include socioeconomic lifecourse measures, both conventional and domestic, and parity. We focus on white women from the UK/Ireland; we are separately investigating smoking patterns among women from other ethnic groups where diverse migration histories and gender norms are important influences (Hawkins, Lamb, Cole, Law, & the Millennium Cohort Study Child Health Group, 2008; Sproston & Mindell, 2006).

## Methods

### Participants

The Millennium Cohort Study (MCS) includes children born in 2000–2002 to families resident in the UK (Dex & Joshi, 2005). The first interview occurred when the infant was 9 months old (response 72%); 80% (14 630) of the singleton infants participated in the second interview when the child was 3 years (Plewis & Ketende, 2006). Mothers reported their ethnicity, classified using official guidelines (ONS, 2003). White women were further categorised as being from the UK or Ireland rather than from any other country. Ethical approval was received from the South West and London Multi-Centre Research Ethics Committees and face-to-face home interviews were conducted by an experienced research team.

Among the 12,159 British/Irish white mothers with singleton children who participated in both contacts, 11,857 (98%) had data available to examine lifecourse influences on smoking before pregnancy. Exclusions were primarily because the main respondent was not female (95), not a natural parent (66) and/or information was missing on current SEC (133). For information on smoking at 9 months postpartum, 11,403 (94%) mothers had data available; additional exclusions were because information was missing on postpartum smoking and/or they were pregnant again.

Of the 4455 women who smoked before pregnancy, 4427 (99%) had data available to examine quitting: 28 were excluded because information was missing on whether they quit.

### Outcome measures

In line with UK practice, women who reported smoking one cigarette or more a day were considered to be regular smokers (Ali et al., 2009). The first interview asked 'about how many cigarettes (including roll-ups) a day were you usually smoking just before you became pregnant?'. Those reporting smoking  $\geq 1$

cigarette a day were defined as *smoking prior to pregnancy*. Mothers were also asked whether they currently smoked any tobacco products: those smoking  $\geq 1$  cigarette a day were defined as *smoking at 9 months postpartum*.

The first interview also asked mothers whether they changed the amount they smoked during pregnancy and the month they made this change. Those reporting their consumption in months one through six as zero were defined as *quitting in pregnancy* (93% of quitters reported quitting in months 1–3; 7% in months 4–6). Women who reported quitting after the sixth month ( $n = 7$ ) were classified as smoking throughout pregnancy.

### Predictive factors

The first interview provided our measure of education (age of leaving fulltime education) and adult SEC. Adult SEC was measured by mother's occupation, classified using the UK's official National Statistics Socio-economic Classification (NS-SEC) in its 4-category version (Rose & Pevalin, 2003) and by annual household income, a more direct measure of family living standards; if this was missing, values from the second interview were substituted (553). Two domestic lifecourse measures were

**Table 1**  
Social profile of the sample ( $n = 11,857$ ).

	N	Weighted %
Childhood circumstances <sup>a</sup>		
Highest	2514	22.9
Intermediate	2561	21.6
Lowest	4553	37.7
Economically inactive	925	6.7
Don't know	1304	11.0
Missing	0	
Age of leaving education		
22 and over	1151	9.7
19–21	1448	12.2
17–18	3538	29.6
16 and under	5692	48.6
Missing	28	
Age at first live birth		
30+	3002	26.6
25–29	3470	30.4
20–24	3002	24.2
14–19	2266	18.8
Missing	117	
Current NS-SEC <sup>a</sup>		
Highest	3643	31.3
Intermediate	2651	23.4
Lowest	5031	41.3
Economically inactive	532	3.9
Missing	0	
Household income		
£33000+	2628	24.4
£22000–33000	2603	23.0
£11000–22000	3805	31.7
£0–11000	2628	20.9
Missing	193	
Cohabitation status		
Non-lone mother	10051	85.8
Lone mother	1806	14.2
Missing	0	
Parity		
Not first live birth	6763	57.3
First live birth	5040	42.7
Missing	54	

<sup>a</sup> highest = managerial & professional occupations; intermediate = intermediate occupations; lowest = routine & manual occupations; economically inactive = never worked & long-term unemployed.

**Table 2**

Smoking prevalence before pregnancy ( $n = 11,857$ ) and at 9 months postpartum ( $n = 11,403$ ).

	Weighted % before pregnancy	Weighted % 9 months postpartum
Childhood circumstances <sup>a</sup>		
Highest	24.6	18.5
Intermediate	33.7	27.2
Lowest	38.5	32.7
Economically inactive	55.1	50.8
Don't know	49.8	42.4
Age of leaving education		
22 and over	11.6	7.4
19–21	19.3	13.3
17–18	28.9	23.5
16 and under	50.6	43.9
Age at first live birth		
30+	18.0	13.5
25–29	25.2	20.4
20–24	47.6	40.7
14–19	66.8	58.3
Current NS-SEC <sup>a</sup>		
Highest	19.0	13.8
Intermediate	28.2	22.1
Lowest	51.9	45.1
Economically inactive	66.7	62.9
Household income		
£33000+	16.5	12.4
£22000–33000	25.0	20.2
£11000–22000	41.6	34.0
£0–11000	65.7	59.1
Cohabitation status		
Non-lone mother	31.4	25.4
Lone mother	68.6	61.6
Parity		
Not first live birth	35.1	31.4
First live birth	38.5	29.1

<sup>a</sup> highest = managerial & professional occupations; intermediate = intermediate occupations; lowest = routine & manual occupations; economically inactive = never worked & long-term unemployed.

available: age at first live birth and cohabitation status (lone parent/cohabiting parent), together with parity (whether the child was their first live born or not).

The second interview (when their child was 3 years) included one measure of childhood SEC. Mothers reported whether their father worked when they were age 14 and, if so, the type of job he did. The free text was coded into types of employment and collapsed into NS-SEC categories (Rose & Pevalin, 2003). Approximately 11% of mothers reported they did not know whether their father worked and this group was included as a separate category in our measure of childhood SEC.

Because lifecourse influences on cessation may operate, at least in part, through nicotine dependence, our analyses of quitting also included cigarette consumption prior to pregnancy.

### Statistical methods

All analyses were conducted using STATA statistical software, version 10.1 SE (Stata Corporation, Texas), with survey commands to account for the clustered sampling design and obtain robust standard errors. Weighted percentages were derived and regression analyses were conducted using survey and non-response weights to account for the clustered sampling and attrition between contacts. *P* values were calculated by an adjusted Wald test.

Unadjusted analyses included conventional measures (childhood SEC, education, adult SEC) and domestic measures (age of entry into

motherhood, cohabitation status) of the socioeconomic lifecourse, along with parity and, for quitting, pre-pregnancy cigarette consumption. In the mutually adjusted model, the full range of measures was included. For the model examining quitting smoking, using an adjusted Wald test, interactions were tested between parity and all lifecourse measures; none was significant.

### Results

Table 1 describes our study population. Over a third (37%) reported that they were smokers prior to pregnancy; at 9 months postpartum, prevalence was 31%. Of those smoking before pregnancy, 36% gave up during pregnancy; of the quitters, 43% were non-smokers at 9 months postpartum.

#### Smoking status before and after pregnancy

Table 2 describes the social patterning of smoking status prior to pregnancy and at 9 months. Across conventional and domestic lifecourse measures, greater disadvantage was associated with higher prevalence. Smoking prevalence prior to pregnancy climbed in line with increasing childhood disadvantage; similar but steeper social gradients were evident for education and current SEC. Age at first birth also displayed steep gradients and prevalence was over twice as

**Table 3**

Smoking before pregnancy ( $n = 11,857$ ): unadjusted and mutually adjusted odds ratios (OR) (95% confidence intervals).

	Unadjusted OR (95% CI)	Mutually adjusted OR (95% CI)
Childhood circumstances <sup>a</sup>		
Highest	1	1*
Intermediate	1.56 (1.35, 1.81)	1.05 (0.89, 1.24)
Lowest	1.93 (1.71, 2.18)	1.00 (0.87, 1.14)
Economically inactive	3.78 (3.17, 4.49)	1.12 (0.91, 1.37)
Don't know	3.05 (2.58, 3.60)	1.28 (1.06, 1.55)
Age of leaving education		
22 and over	1	1***
19–21	1.82 (1.42, 2.34)	1.30 (1.00, 1.69)
17–18	3.10 (2.51, 3.82)	1.73 (1.38, 2.16)
16 and under	7.80 (6.28, 9.70)	2.79 (2.21, 3.54)
Age at first live birth		
30+	1	1***
25–29	1.54 (1.35, 1.75)	1.33 (1.15, 1.53)
20–24	4.15 (3.61, 4.76)	2.38 (2.02, 2.80)
14–19	9.17 (7.94, 10.60)	3.51 (2.94, 4.19)
Current NS-SEC <sup>a</sup>		
Highest	1	1***
Intermediate	1.67 (1.42, 1.95)	0.99 (0.82, 1.18)
Lowest	4.59 (4.00, 5.27)	1.45 (1.23, 1.70)
Economically inactive	8.53 (6.79, 10.72)	1.29 (1.00, 1.67)
Household income		
£33000+	1	1***
£22000–33000	1.69 (1.42, 2.01)	1.15 (0.96, 1.37)
£11000–22000	3.61 (3.12, 4.19)	1.58 (1.35, 1.84)
£0–11000	9.72 (8.33, 11.35)	2.19 (1.78, 2.69)
Cohabitation status		
Non-lone mother	1	1***
Lone mother	4.79 (4.24, 5.41)	1.63 (1.40, 1.91)
Parity		
Not first live birth	1	1***
First live birth	1.15 (1.04, 1.27)	1.52 (1.35, 1.72)

\*\*\* $p \leq 0.001$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.1$ .

<sup>a</sup> highest = managerial & professional occupations; intermediate = intermediate occupations; lowest = routine & manual occupations; economically inactive = never worked & long-term unemployed.

high among lone compared to cohabiting mothers. Prevalence varied little by parity, with slightly lower rates among women who were already mothers. Similar lifecourse patterns were evident at 9 months postpartum; by this time point, prevalence was slightly lower among first-time mothers.

Table 3 describes the contribution of lifecourse factors to the prediction of smoking before pregnancy. In the mutually adjusted model, all lifecourse factors were significant (although the effects of childhood circumstances were largely confined to mothers who did not know their father's occupation). The odds of smoking were also significantly higher among women who had yet to have their first child. Repeating the analysis at 9 months postpartum, measures of lifecourse disadvantage (conventional and domestic) continued to be significant in the mutually-adjusted model; parity, however, was no longer significant (data not shown).

#### Quitting in pregnancy

Table 4 describes the social patterning of quitting in pregnancy. Conventional and domestic measures of disadvantage were associated with lower prevalence and unadjusted odds of quitting; first birth increased the chances of quitting (columns A and B).

Column C presents the mutually adjusted model and column D also includes cigarette consumption. Both models confirm that the conventionally-measured lifecourse contributes significantly to the prediction of quitting in pregnancy. Of the two measures of the domestic lifecourse, age at first live birth was modestly significant; overall the odds were higher among younger mothers than among the reference group (women aged  $\geq 30$ ). Parity was a significant predictor; the odds of quitting were significantly higher for smokers having their first child than for those having a subsequent child. Previous cigarette consumption was an additional predictor of quitting (column D), with lighter smokers much more likely to quit in pregnancy. However, its inclusion had little effect on the contribution of lifecourse factors and parity to the odds of quitting.

As a final set of analyses, we investigated smoking status at 9 months after birth among smokers who quit in pregnancy (data not shown). In the mutually adjusted model, a limited set of lifecourse measures – education, household income and, more modestly, cohabitation status – predicted sustained cessation, with lower odds linked to greater disadvantage. Parity and pre-pregnancy cigarette consumption were the major predictors: first-time mothers and lighter smokers were much less likely to have resumed smoking.

**Table 4**

Quitting smoking during pregnancy: prevalence rates, unadjusted and mutually adjusted odds ratios (OR) (95% confidence intervals) ( $n = 4427$ ).

	Weighted % A	Unadjusted OR (95% CI) B	Mutually adjusted OR (95% CI) C	Mutually adjusted OR (95% CI) D
Childhood circumstances <sup>a</sup>				
Highest	53.7	1	1***	1**
Intermediate	39.1	0.55 (0.44, 0.70)	0.74 (0.56, 0.97)	0.77 (0.57, 1.03)
Lowest	33.1	0.43 (0.35, 0.52)	0.67 (0.52, 0.85)	0.70 (0.54, 0.91)
Economically inactive	23.6	0.27 (0.20, 0.36)	0.50 (0.36, 0.71)	0.51 (0.35, 0.73)
Don't know	30.5	0.38 (0.29, 0.49)	0.63 (0.47, 0.85)	0.69 (0.50, 0.93)
Age of leaving education				
22 and over	64.2	1	1***	1***
19–21	55.3	0.69 (0.43, 1.10)	0.86 (0.53, 1.39)	0.98 (0.58, 1.67)
17–18	47.3	0.50 (0.32, 0.78)	0.74 (0.47, 1.17)	0.84 (0.51, 1.40)
16 and under	28.9	0.23 (0.15, 0.35)	0.47 (0.30, 0.74)	0.58 (0.35, 0.96)
Age at first live birth				
30+	49.9	1	1	1*
25–29	45.8	0.85 (0.67, 1.08)	1.14 (0.86, 1.51)	1.24 (0.94, 1.65)
20–24	31.5	0.46 (0.38, 0.57)	0.97 (0.75, 1.26)	1.06 (0.81, 1.38)
14–19	29.3	0.42 (0.34, 0.52)	1.20 (0.90, 1.59)	1.31 (0.97, 1.76)
Current NS-SEC <sup>a</sup>				
Highest	55.3	1	1***	1***
Intermediate	42.7	0.60 (0.48, 0.75)	0.81 (0.64, 1.02)	0.76 (0.58, 0.98)
Lowest	30.8	0.36 (0.30, 0.43)	0.66 (0.52, 0.84)	0.63 (0.48, 0.81)
Economically inactive	19.3	0.19 (0.13, 0.28)	0.38 (0.25, 0.56)	0.35 (0.23, 0.54)
Household income				
£33000+	55.0	1	1***	1***
£22000–33000	46.9	0.72 (0.55, 0.95)	0.96 (0.71, 1.29)	1.08 (0.79, 1.47)
£11000–22000	35.5	0.45 (0.35, 0.58)	0.72 (0.53, 0.96)	0.82 (0.59, 1.13)
£0–11000	26.9	0.30 (0.23, 0.40)	0.52 (0.37, 0.74)	0.61 (0.42, 0.88)
Cohabitation status				
Non-lone mother	38.7	1	1	1
Lone mother	28.9	0.64 (0.54, 0.77)	1.00 (0.81, 1.23)	1.00 (0.80, 1.25)
Parity				
Not first live birth	27.6	1	1***	1***
First live birth	46.7	2.30 (1.97, 2.68)	2.20 (1.86, 2.59)	2.29 (1.92, 2.72)
Number of cigarettes per day before pregnancy				
1–9	61.6	1		1***
10–19	31.7	0.29 (0.25, 0.34)		0.31 (0.27, 0.37)
20+	19.4	0.15 (0.12, 0.18)		0.17 (0.14, 0.21)

Significant in models C and D: \*\*\* $p \leq 0.001$ ; \*\* $p \leq 0.05$ ; \* $p \leq 0.1$ .

<sup>a</sup> highest = managerial & professional occupations; intermediate = intermediate occupations; lowest = routine & manual occupations; economically inactive = never worked & long-term unemployed.

## Strengths and limitations

Our study is based on a large UK study from which we could derive measures of the 'conventional' and 'domestic' socioeconomic lifecourse and smoking habits through a key life-stage for women and their children.

Our measure of childhood SEC is widely used and based on recalled information on father's occupation which validation studies suggest is broadly reliable (Berney & Blane, 1997). We treated mothers without information on father's occupation as a separate group; our analyses using other lifecourse measures indicated that the group was more advantaged than those with economically-inactive fathers, but less advantaged than those with fathers with a known occupation.

Rates of pre-pregnancy smoking and quitting in pregnancy were similar to national rates for 2000, also based on self-reported measures (Hamlyn, Brooker, Oleinikova, & Wands, 2002). While these measures are likely to under-estimate prevalence and over-estimate quit rates (West, 2002), patterns appear consistent across socioeconomic groups (Graham & Owen, 2003), suggesting that our findings should not be affected by differential reporting. Because smoking status before and after pregnancy were reported at the same time point, they may be more correlated than if each was reported contemporaneously. However, studies comparing retrospective and contemporaneous measures indicate a large measure of agreement (Kenkel, Lillard, & Mathios, 2003).

Our investigation was constrained by data available in the MCS. More extensive biographical information – for example, on childhood circumstances, partnership histories and smoking careers – would have enabled more detailed analyses of the socioeconomic lifecourse influences on smoking status. These influences are likely to operate indirectly through a range of mediating factors, including smoking habits of parents, peers and partners as well as broader lifestyle and community-level factors (Ensminger et al., 2009; McGee & Williams, 2006; Tehranifar et al., 2009).

## Discussion

Countries with declining smoking prevalence are scarred by socioeconomic gradients in smoking and quitting, both in the general population and among expectant mothers (Giskes et al., 2005; USDHHS, 2001, 2007). In analyses which included parity, we investigated socioeconomic lifecourse influences on women's smoking before, during and after pregnancy in analyses using both conventional measures, like childhood SEC and education, and indicators of women's domestic trajectories and circumstances.

Firstly, we add to evidence that lifecourse disadvantage increases smoking risk. Women on disadvantaged trajectories were more likely to start their pregnancy as smokers. Every measured dimension of disadvantage – poor childhood SEC, educational disadvantage, young motherhood, poor adult SEC, lone motherhood – increased smoking risk before pregnancy. Conventional measures (childhood SEC, education, adult SEC) were the more powerful predictors of quitting in pregnancy; one measure of the domestic lifecourse, age at first birth, also had a modest effect. These patterns were little attenuated by before-pregnancy cigarette consumption, suggesting that, in line with qualitative evidence, social disadvantage and nicotine dependence act independently on smoking persistence (Bancroft, Wiltshire, Parry, & Amos, 2003).

Secondly, our study confirms the importance of parity. Having a first child substantially increased the odds of quitting in pregnancy and remaining a non-smoker after birth, and its positive effects were little changed after controlling for lifecourse measures and cigarette consumption. As this suggests, becoming a mother

can be a springboard for positive lifestyle change for all women. Again this finding is supported by qualitative studies (Graham & McDermott, 2006).

Our study adds weight to the broader case for policies to address inequalities across the lifecourse (Graham, 2009). This is particularly true when economic recession is bearing down hardest on those from poorer backgrounds and on disadvantaged trajectories (ONS, 2009). However while increasing the risks, our study makes clear that the dye is not irrevocably cast by social disadvantage: first pregnancy appears to be an opportunity for successful quitting regardless of social background. Investing in smoking cessation services for women before, during and after pregnancy is an important way of promoting the health of all mothers and their children.

## References

- Ali, A., Binmor, R., Dunstan, S., Greer, J., Matthews, D., Murray, L., et al. (2009). *General household survey 2007: Overview report*. London: Office for National Statistics.
- Bancroft, A., Wiltshire, S., Parry, O., & Amos, A. (2003). 'It's like an addiction first thing... afterwards it's like a habit': daily smoking behaviour among people living in areas of deprivation. *Social Science & Medicine*, 56, 1261–1267.
- Berney, L. R., & Blane, D. B. (1997). Collecting retrospective data: accuracy of recall after 50 years judged against historical records. *Social Science & Medicine*, 45(10), 1519–1525.
- Brunner, E., Shipley, M. J., Blane, D., Smith, G. D., & Marmot, M. G. (1999). When does cardiovascular risk start? Past and present socioeconomic circumstances and risk factors in adulthood. *Journal of Epidemiology & Community Health*, 53(12), 757–764.
- Dex, S., & Joshi, H. (2005). *Babies of the new millennium*. London: Policy Press.
- Ensminger, M. E., Smith, K. C., Juon, H.-S., Pearson, J. L., & Robertson, J. A. (2009). Women, smoking, and social disadvantage over the life course. *Drug and Alcohol Dependence*, 104(Suppl. 1), S34–S41.
- Gilman, S. E., Abrams, D. B., & Buka, S. L. (2003). Socioeconomic status over the lifecourse and stages of cigarette use: initiation, regular use, and cessation. *JECH*, 57, 802–808.
- Giskes, K., Kunst, A. E., Benach, J., Borrell, C., Costa, G., Dahl, E., et al. (2005). Trends in smoking behaviour between 1985 and 2000 in nine European countries by education. *Journal of Epidemiology and Community Health*, 59(5), 395–401.
- Graham, H. (2007). *Unequal lives: Health and socioeconomic inequalities*. Maidenhead: Open University Press.
- Graham, H. (2009). Tackling health inequalities: the scope for policy. In H. Graham (Ed.), *Understanding health inequalities*. Buckingham: Open University Press.
- Graham, H., & Der, G. (1999). Influences on women's smoking status: the contribution of socio-economic status in adolescence and adulthood. *European Journal of Public Health*, 9, 137–141.
- Graham, H., Francis, B., Inskip, H. M., Harman, J., & the SWS Study Team. (2006). Socioeconomic lifecourse influences on women's smoking status in early adulthood. *Journal of Epidemiology & Community Health*, 60(3), 228–233.
- Graham, H., & Owen, L. (2003). Are there socioeconomic differentials in under-reporting of smoking in pregnancy? *Tobacco Control*, 12(4), 434.
- Graham, H., & McDermott, E. (2006). Qualitative research and the evidence-base of policy: insights from studies of teenage mothers in the UK. *Journal of Social Policy*, 35(1), 1–17.
- Hamlyn, B., Brooker, S., Oleinikova, K., & Wands, S. (2002). *Infant feeding survey 2000*. London: The Stationery Office.
- Hawkins, S. S., Lamb, K., Cole, T. J., Law, C., & the Millennium Cohort Study Child Health Group. (2008). Influence of moving to the UK on maternal health behaviours: prospective cohort study. *British Medical Journal*, 336, 1052–1055.
- Jefferis, B., Power, C., Graham, H., & Manor, O. (2004). Effects of childhood socioeconomic circumstances on persistent smoking. *American Journal of Public Health*, 94(2), 279–285.
- Kahn, R. S., Certain, L., & Whitaker, R. C. (2002). A reexamination of smoking before, during, and after pregnancy. *American Journal of Public Health*, 92(11), 1801–1808.
- Kenkel, D., Lillard, D. R., & Mathios, A. (2003). Smoke or fog? The usefulness of retrospectively reported information about smoking. *Addiction*, 98, 1307–1313.
- Kuh, D., Power, C., Blane, D., & Bartley, M. (2004). Socioeconomic pathways between childhood and adult health. In D. L. Kuh, & Y. Ben-Shlomo (Eds.), *A life course approach to chronic disease epidemiology: Tracing the origins of ill health from early to adult life* (pp. 371–395). Oxford: Oxford University Press.
- McGee, R., & Williams, S. (2006). Predictors of persistent smoking and quitting among women smokers. *Addiction*, 31, 1711–1715.
- Office for National Statistics (ONS). (2003). *Ethnic group statistics: a guide for the collection and classification of ethnicity data*. London: Stationery Office.
- Office for National Statistics (ONS). (2009). *Labour force survey 2009*. London: Stationery Office.
- Plewis, I., & Ketende, S. (2006). *Millennium cohort study: Technical report on response*. London: Institute of Education, University of London.
- Power, C., Graham, H., Due, P., Hallqvist, J., Joung, I., Kuh, D., et al. (2005). The contribution of childhood and adult socioeconomic position to adult obesity

- and smoking behaviour: an international comparison. *International Journal of Epidemiology*, 34(2), 335–344.
- Rose, D., & Pevalin, D. J. (2003). *A researcher's guide to the national statistics socio-economic classification*. London: Sage Publications.
- Spencer, N. (2006). Explaining the social gradient in smoking in pregnancy. *Social Science & Medicine*, 62, 1250–1259.
- Sproston, K., & Mindell, J. (Eds.). (2006). *Health survey for England 2004: The health of minority ethnic groups*. London: NHS Information Centre.
- Tehraniifar, P., Liao, Y., Ferris, J. S., & Terry, M. B. (2009). Life course socioeconomic conditions, passive tobacco exposures and cigarette smoking in a multiethnic birth cohort of US women. *Cancer Causes Control*, 20, 867–876.
- United States Department of Health and Human Services (USDHHS). (2001). *Women and smoking*. A Report of the Surgeon General. Rockville, Maryland: National Center for Health Statistics.
- United States Department of Health and Human Services (USDHHS). (2007). *Health, United States 2007*. Hyattsville, MD: National Center for Health Statistics.
- West, R. (2002). Smoking cessation and pregnancy. *Fetal and Maternal Medicine Review*, 13(3), 181–194.